ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

Assessing and Enhancing the CWD Emergency Response Plan: Incorporating Lessons from Typhoon Odette using Integrated Regulatory Frameworks

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Abstract:- This research aims to evaluate the effectiveness of the existing CWD emergency response plan and advocate enhancements based totally at the lessons found out from Typhoon Odette. By analyzing the regulatory frameworks governing CWD control and emergency response, the examiner seeks to pick out gaps and inconsistencies that hindered the performance of the reaction to the typhoon.

Through an integrated method, the research will examine the regulatory panorama, investigate the preparedness and effectiveness of the CWD emergency reaction plan, and endorse recommendations for boosting its skills. The findings will make contributions to the improvement of greater robust and complete CWD emergency reaction plans that could better mitigate the effects of future disasters.

I. INTRODUCTION

In today's rapidly changing world where emergencies and natural disasters can occur suddenly and with alarming intensity, the need for a well-designed and organized Emergency Response Plan (ERP) cannot be overstated. Effective emergency planning is crucial for ensuring that organizations are prepared to handle unforeseen issues efficiently (Smith, 2020). This specific ERP was meticulously developed based on the extensive response and preparedness experience of the Carcar Water District (CWD) following the devastation caused by Typhoon Odette on December 16, 2021. The CWD's response during this disaster not only tested its strengths but also provided valuable lessons that became central to the design of this comprehensive ERP (Jones & Brown, 2022). This process highlights a deeper understanding of the challenges faced during emergencies and incorporates these lessons to enhance future preparedness (White et al., 2019).

The design of this ERP integrates various guidelines and regulatory frameworks established by the CWD to ensure robustness and compliance. This includes the creation of a CWD National Performance Continuity Plan, which outlines strategies for maintaining critical infrastructure during crises, in alignment with the Republic Act 9729, known as the Climate Change Act of 2009, emphasizing the need for proactive measures against climate challenges (Republic Act 9729, 2009).

Additionally, the ERP adheres to Republic Act 10121, the Philippine Disaster Risk Reduction and Management Act of 2010. By aligning with these legal frameworks and best practices, the ERP not only addresses national and local needs but also ensures uniform response strategies and clear planning objectives as part of the CWD Strategic Business Plan (Philippine Disaster Risk Reduction and Management Act, 2010). This plan establishes specific strategies for response, minimizes potential disruptions in critical areas, identifies responsible personnel, communicates with stakeholders to mitigate disaster impacts, and integrates the ERP comprehensively (Garcia & Santos, 2021). This integration ensures that the ERP is not an isolated document but a vital part of the overall CWD process, enhancing the organization's resilience and crisis management capabilities (Lopez & Hernandez, 2018).

Fundamentally, this ERP represents a commitment to protecting productivity, safeguarding infrastructure, and ensuring the continuity of critical services during emergencies. It strengthens the organization's ability to serve the community with unwavering confidence and readiness (Martin, 2017). The study aimed to align the ERP with established guidelines and regulatory frameworks, including the CWD Public Business Continuity Plan, Republic Act 9729 (Climate Change Act of 2009), and Republic Act 10121 (Philippine Disaster Risk Reduction and Management Act of 2010). By integrating these elements, the ERP addresses legal and regulatory requirements, operational best practices, and disaster risk management, ensuring situational adaptability (Rivera, 2020).

Specifically, the study was designed to develop a dynamic and adaptive strategy to effectively manage CWD emergencies, reduce damage to critical infrastructure, and ensure the continuity of essential services (Sanchez et al., 2021). By embedding these features into the ERP, CWD aims to enhance its overall resilience, protect operations, and better serve its community in the face of future emergencies (Torres & Cruz, 2019). This survey establishes a commitment to continuous improvement and preparedness, ensuring that the organization effectively manages complex risks and maintains reliable service delivery under challenging circumstances (Mendoza, 2018).

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

➢ *Statement of the Problems*

- How effectively does the current ERP address the challenges and lessons learned from the response to Typhoon Odette, and what improvements are needed to enhance its efficacy?
- In what ways does the integration of the CWD National Performance Continuity Plan with regulatory frameworks like Republic Act 9729 and Republic Act 10121 improve the robustness and compliance of the ERP?
- What are the specific gaps or weaknesses in the ERP's response strategies and communication protocols that may affect its ability to maintain critical infrastructure and services during emergencies?
- How does the alignment of the ERP with the CWD Strategic Business Plan contribute to its overall effectiveness in managing emergencies and ensuring operational continuity?
- What methods and processes are in place for the continuous evaluation and improvement of the ERP to adapt to evolving emergency scenarios and regulatory changes?

II. METHOD

A. Coverage

The study examines a number of important topics. Firstly, it discusses the Carcar Water District's (CWD) emergency old comprehensive assessment response plan. The assessment evaluates CWD's performance in managing its water supply and protecting its infrastructure through phases of preparedness, response, and recovery. Secondly, the assessment examines local, national, and international regulatory frameworks for water district emergency management. Third, in order to acquire insights and identify issues encountered during the storm, the intervention involved surveying CWD personnel to collect both qualitative and quantitative data. In order to improve, it also looked at best practices and case studies from other water districts. The final objective is to create thorough, workable recommendations that would improve CWD's resistance to upcoming natural disasters and the security of water supply management in Carcar Water District.

B. Tool

The researcher uses Google Form surveys to collect complete and accurate data for our study. This tool allows to effectively collect responses from participant groups, and to ensure that the data is adequate and representative. The Google Form survey is designed to be user-friendly and simple, allowing participants to easily submit their entries from any internet-enabled device. Using this method, it can simplify data collection, maintain confidentiality, and ensure that responses are properly stored and organized for later analysis Your participation in this study invaluable to the success of our study, and it greatly appreciate your time and effort contributing your insights.

III. RESULTS

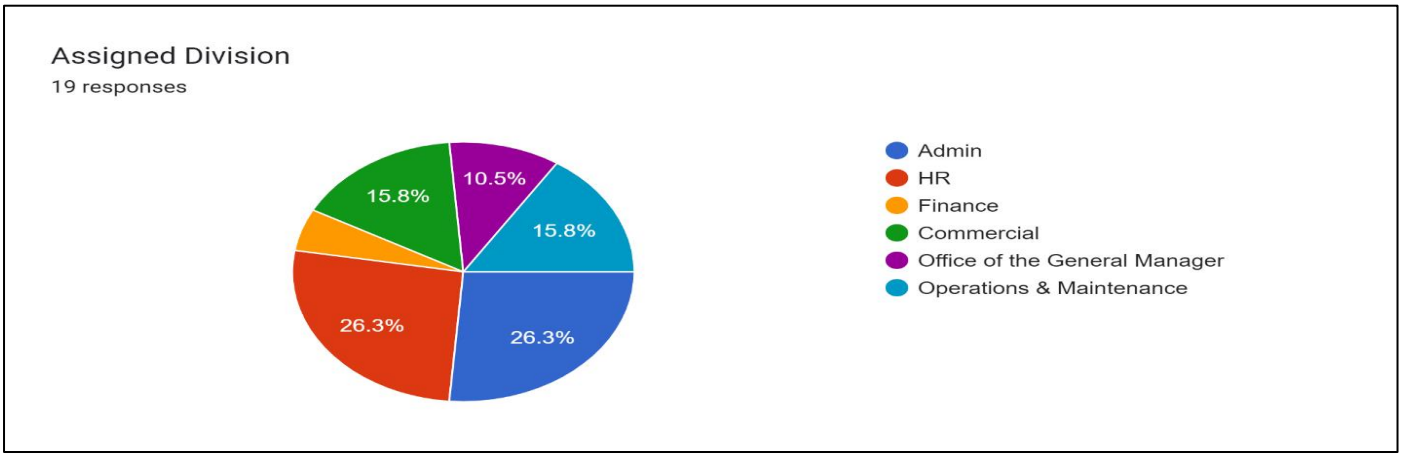

Fig 1: Assigned Division

The figure shows a pie chart titled "Assigned Division" with 19 responses. It divides the responses into the following categories and their corresponding percentages.

- Operations & Maintenance: 26.3%
- Admin: 26.3%
- Commercial: 15.8%
- Finance: 15.8%
- Office of the General Manager: 10.5%
- HR: Not specified

The pie chart visually represents the distribution of assigned divisions among the 19 respondents.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

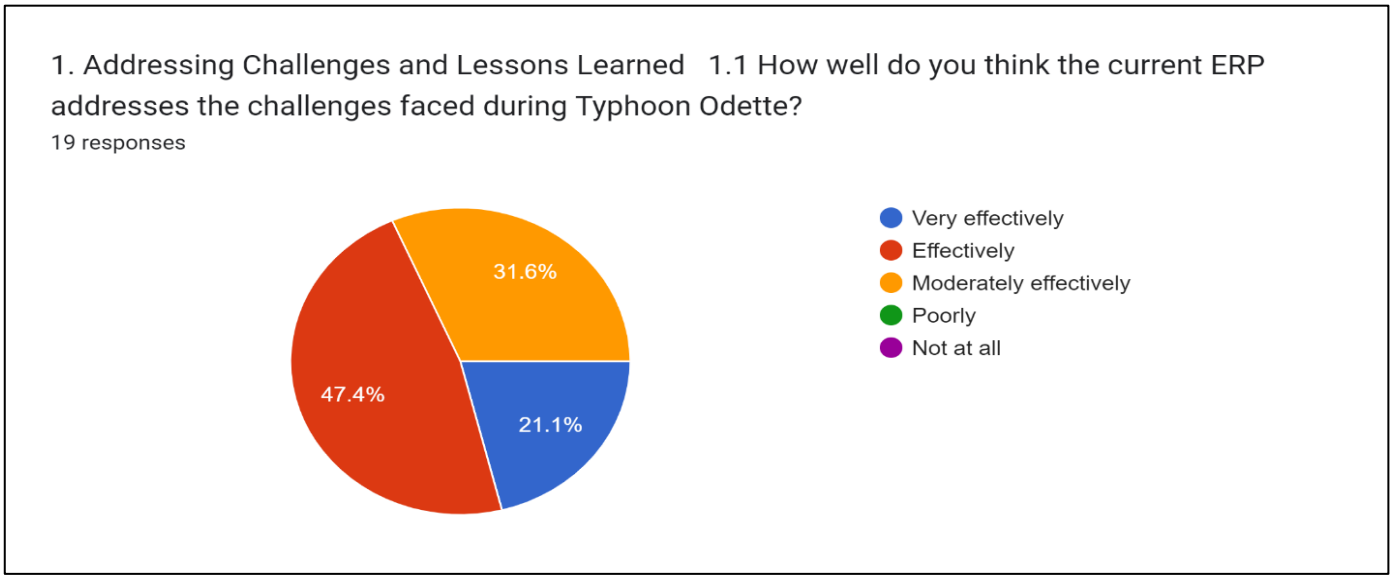

Fig 2: Challenges

The figure shows a pie chart summarizing responses to the question, "How well do you think the current ERP addresses the challenges faced during Typhoon Odette?" with 19 responses.

➢ *The Pie Chart is Divided into 5 Sections, Representing the Following Responses and their Corresponding Percentages*

- Very effective: 31.6%
- Effective: 47.4%
- Moderately effective: 21.1%
- Poorly: Not specified
- Not at all: Not specified

The pie chart visually represents the distribution of responses to the question.

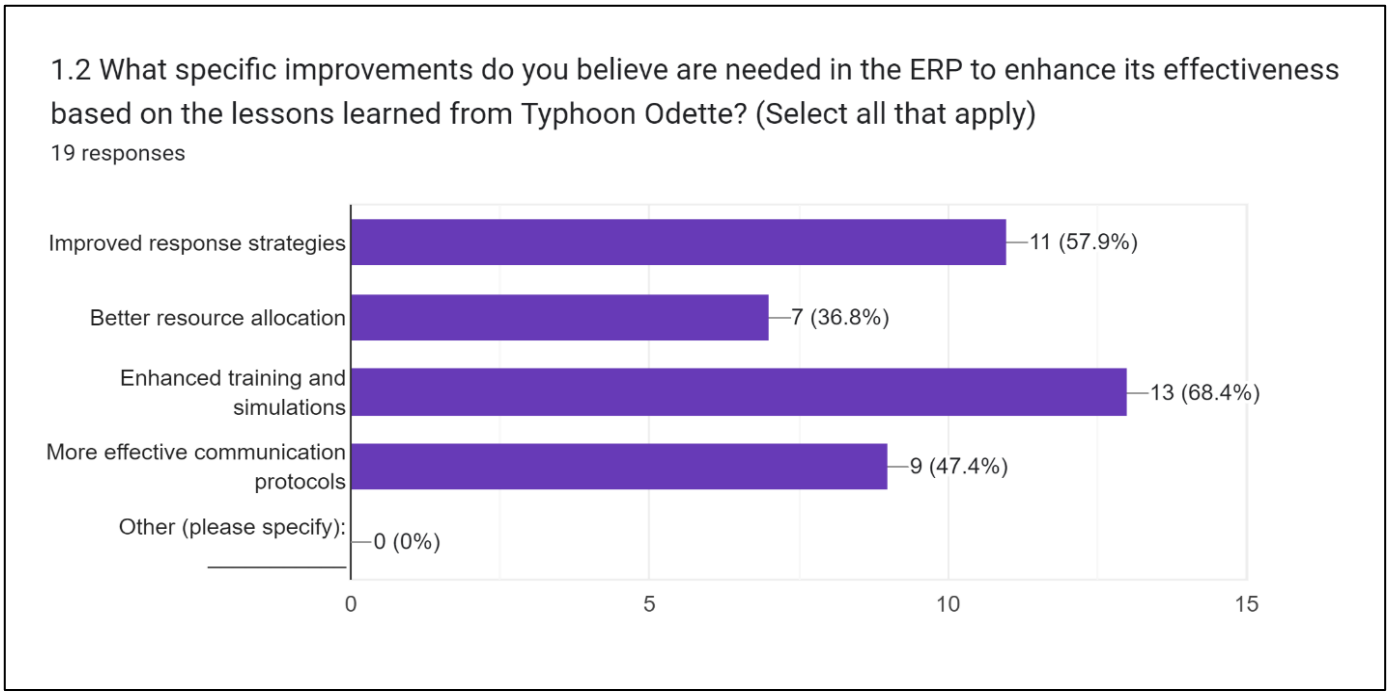

Fig 3: Improvements

The figure shows a vertical bar chart titled "1.2 What specific improvements are needed to increase performance in ERP based on lessons learned from Typhoon Odette? (see all about)".

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

➢ *The Chart Shows the Proportion of Respondents who Selected Each of the Following Variables*

- Improved response strategies: 11 (57.9%)
- Better resource allocation: 7 (36.8%)
- Enhanced training and simulations: 13 (68.4%)
- More effective communication protocols: 9 (47.4%)
- Other (please specify): 0 (0%)

The horizontal bars represent the number of respondents who selected each option, and the percentages indicate the proportion of respondents who selected each option.

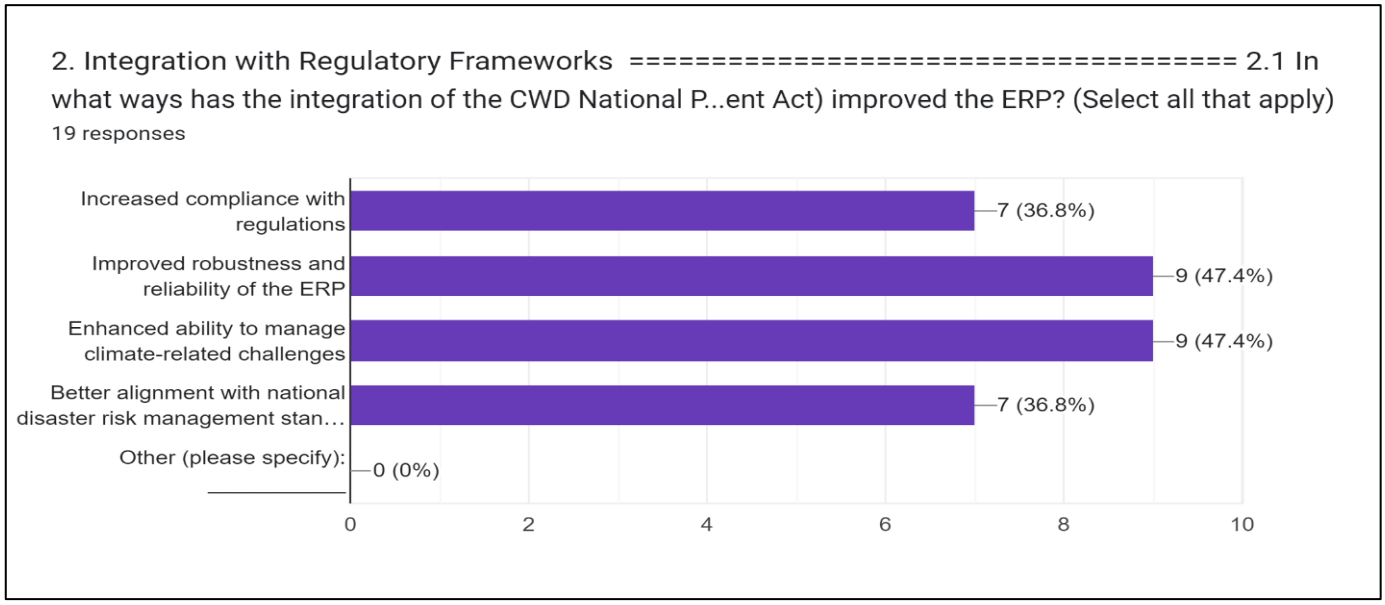

Fig 4: Regulatory Frameworks

- The most selected option was "Enhanced ability to manage climate-related challenges," with 9 out of 19 respondents (47.4%) choosing it.
- "Improved robustness and reliability of the ERP" was also selected by 9 respondents (47.4%).
- "Increased compliance with regulations" and "Better alignment with national disaster risk management stan..." were both chosen by 7 respondents (36.8%).
- No respondents selected "Other (please specify)".

➢ *Overall:*

The chart shows that the CWD National P...ent Act) together have had a positive impact on ERP in addressing weather-related challenges, improving robustness and reliability, and greater compliance with harmonization of national disaster risk Standards.

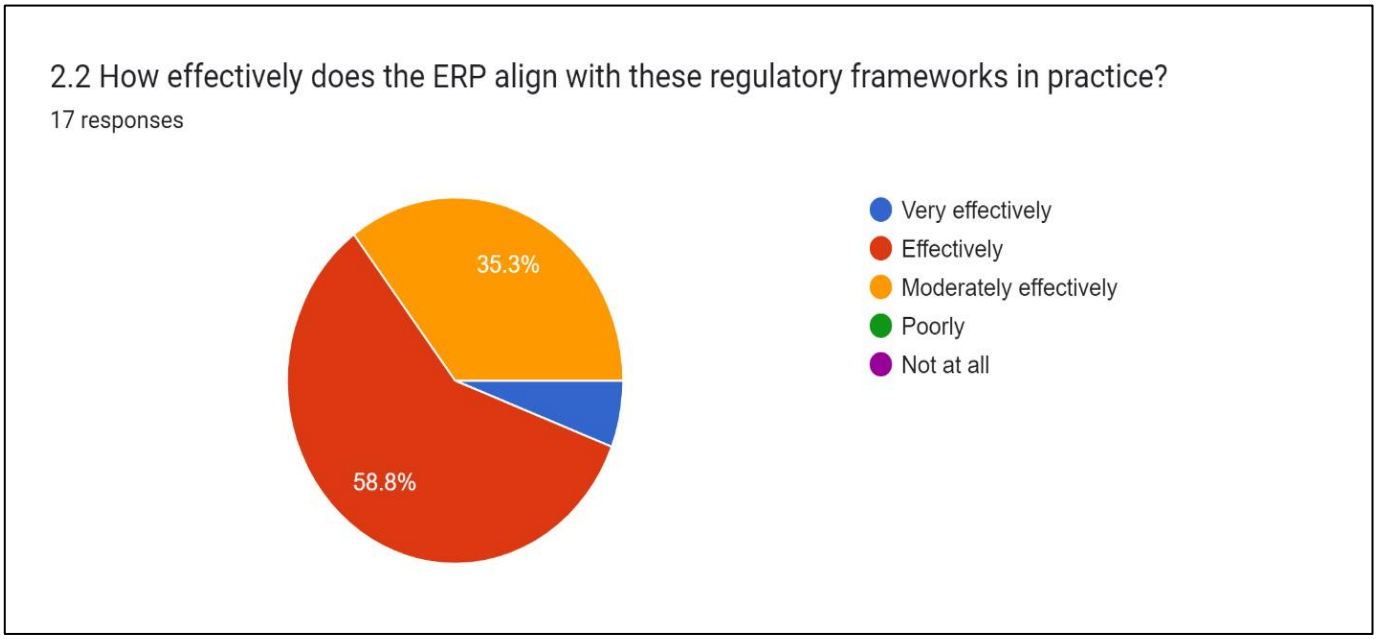

Fig 5: ERP Align

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

The figure shows a pie chart summarizing the responses to the question "How effectively does the ERP align with these regulatory frameworks in practice?" with 17 responses.

➢ *The Pie Chart is Divided into 5 Sections, Representing the Following Response Options and their Corresponding Percentages:*

- Very effective: 35.3%
- Effective: 58.8%
- Moderately effective: Not specified
- Poorly: Not specified
- Not at all: Not specified

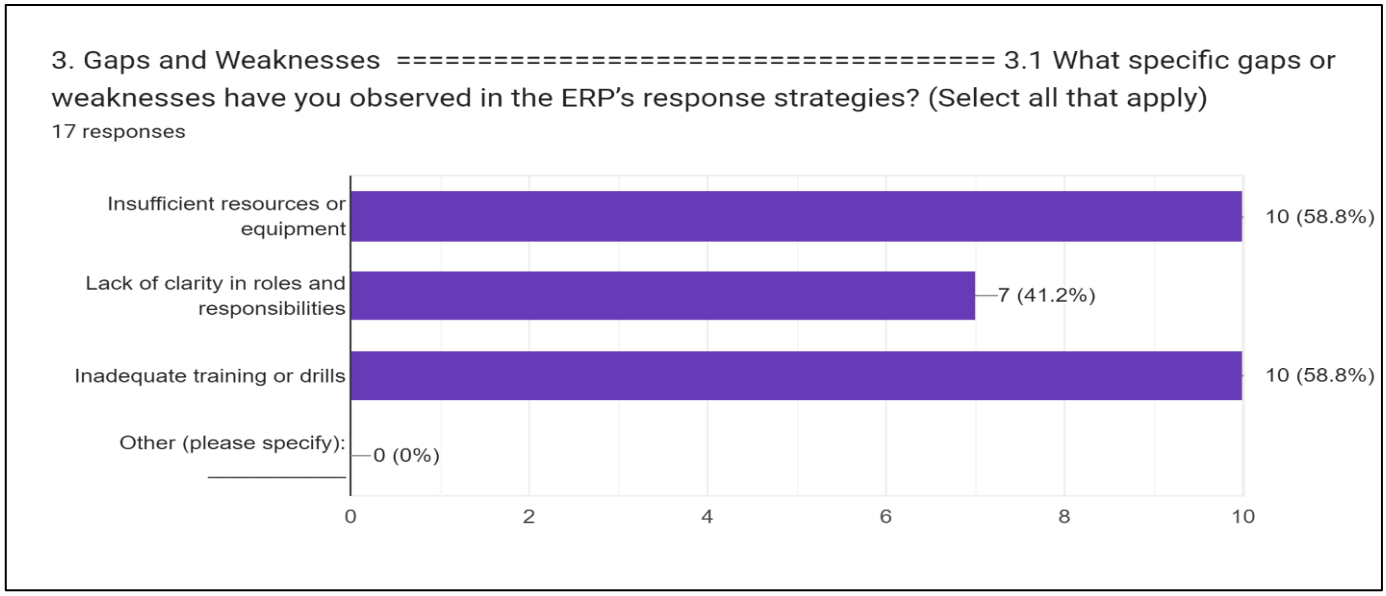

Fig 6: GAPS and WEAKNESSES

It shows a horizontal bar chart titled "3.1 What specific gaps or weaknesses have you observed in the ERP's response strategies? (Select all that apply)".

➢ *The Chart Shows the Number of Respondents Who Selected Each of the Following Improvement Options:*

- Insufficient resources or equipment: 10 (58.8%)
- Lack of clarity in roles and responsibilities: 7 (41.2%)
- Inadequate training or drills: 10 (58.8%)
- Other (please specify): 0 (0%)

The horizontal bars represent the number of respondents who selected each option, and the percentages indicate the proportion of respondents who selected each option.

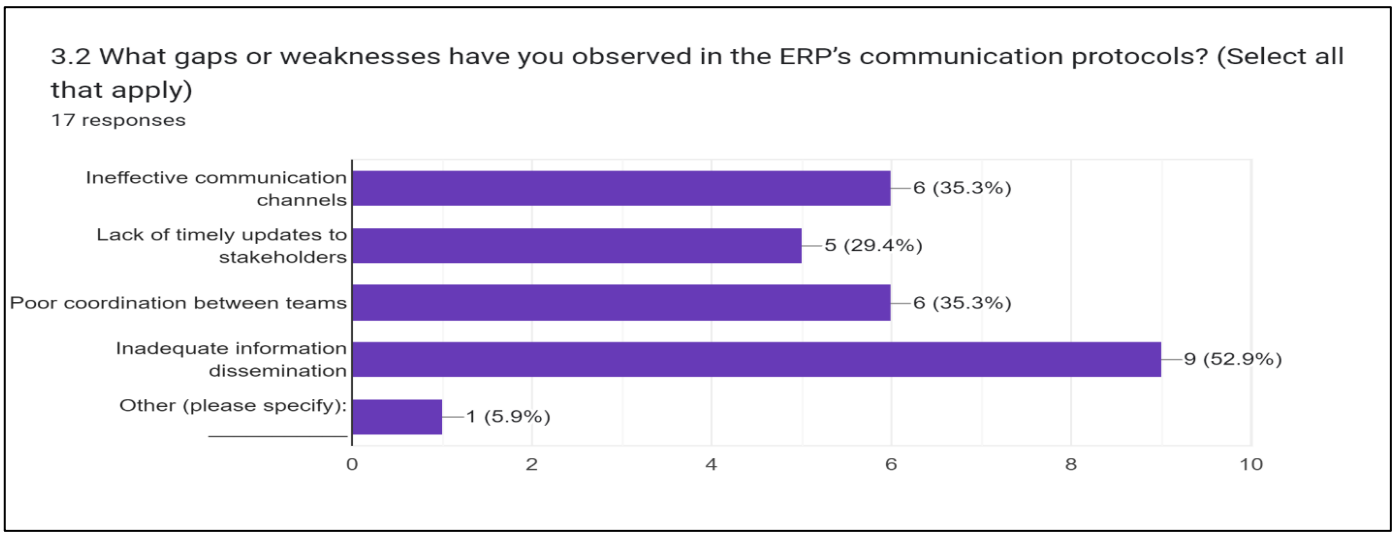

Fig 7: GAPS and WEAKNESSES

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

The figure shows a horizontal bar chart titled "3.2 What gaps or weaknesses have you observed in the ERP's communication protocols? (Select all that apply)".

➢ *The Chart Shows the Number of Respondents Who Selected Each of the Following Improvement Options:*

- Ineffective communication channels: 6 (35.3%)
- Lack of timely updates to stakeholders: 5 (29.4%)
- Poor coordination between teams: 6 (35.3%)
- Inadequate information dissemination: 9 (52.9%)
- Other (please specify): 1 (5.9%)

The horizontal bars represent the number of respondents who selected each option, and the percentages indicate the proportion of respondents who selected each option.

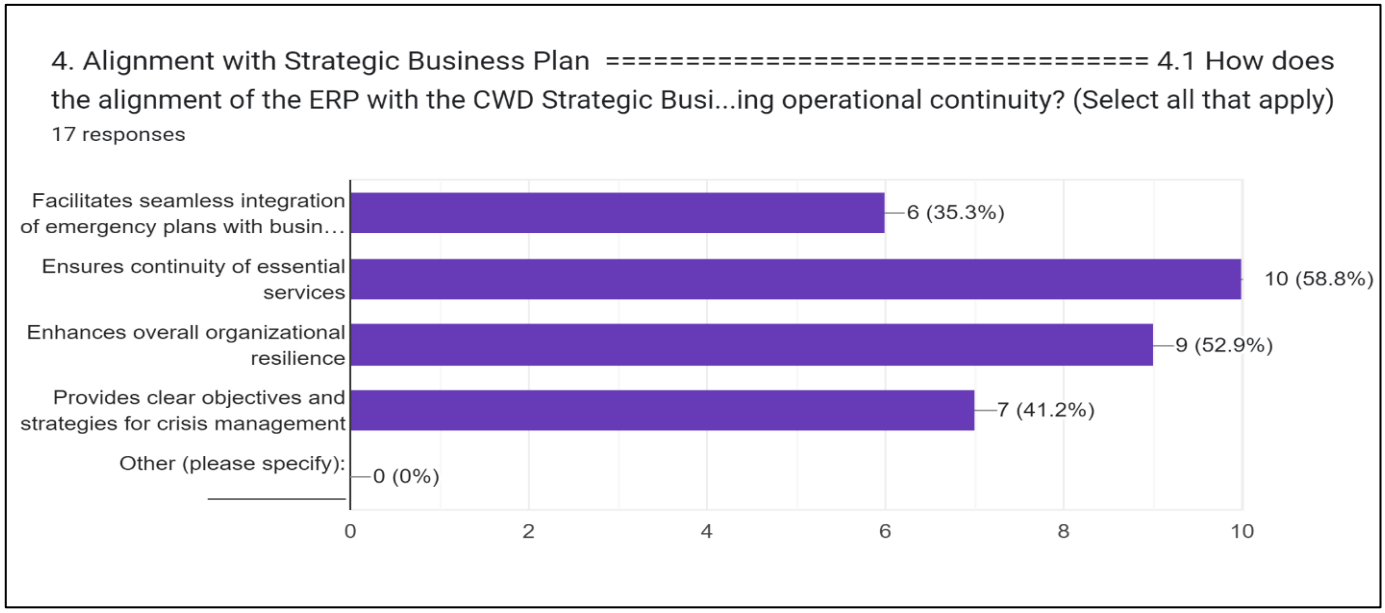

Fig 8: Alignment

It shows a horizontal bar chart titled "4.1 How does the alignment of the ERP with the CWD Strategic Business Plan contribute to ensuring operational continuity? (Select all that apply)".

➢ *The Chart Shows the Number of Respondents who Selected each of the Following Improvement Options:*

- Facilitates seamless integration of emergency plans with business processes: 6 (35.3%)
- Ensures continuity of essential services: 10 (58.8%)
- Enhances overall organizational resilience: 9 (52.9%)
- Provides clear objectives and strategies for crisis management: 7 (41.2%)
- Other (please specify): 0 (0%)

The horizontal bars represent the number of respondents who selected each option, and the percentages indicate the proportion of respondents who selected each option.

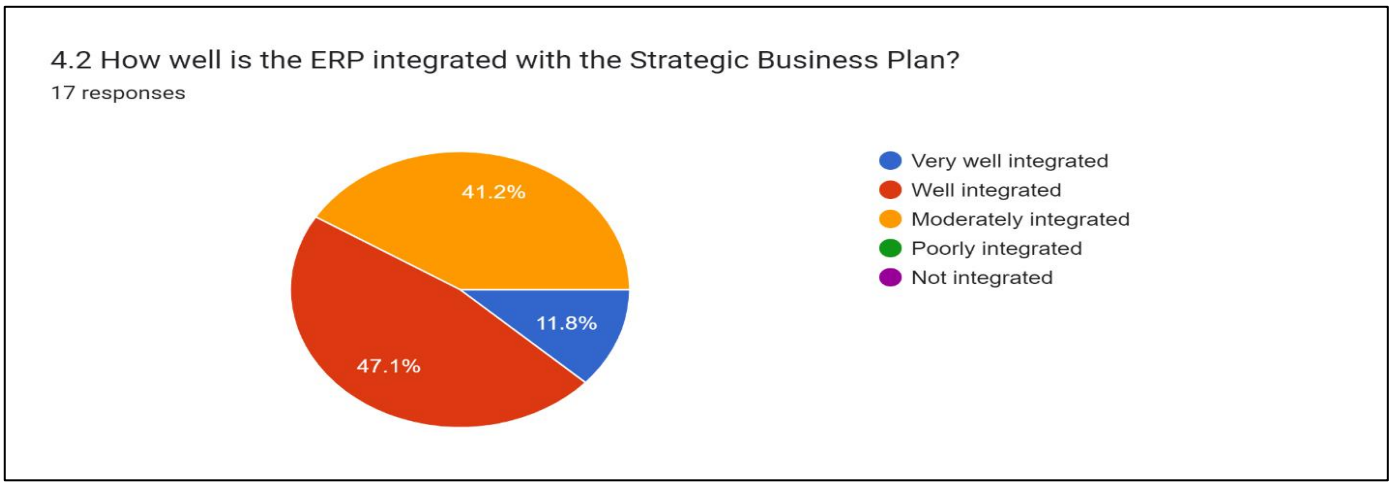

Fig 9: Integration to SBP

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

The figure shows a pie chart summarizing the responses to the question "How well is the ERP integrated with the Strategic Business Plan?" with 17 responses.

➢ *The Pie Chart is Divided into 3 Sections, Representing the Following Response Options and their Corresponding Percentages:*

- Very well integrated: 11.8%
- Well integrated: 47.1%
- Moderately integrated: 41.2%
- Poorly integrated: 0%
- Not integrated: 0%

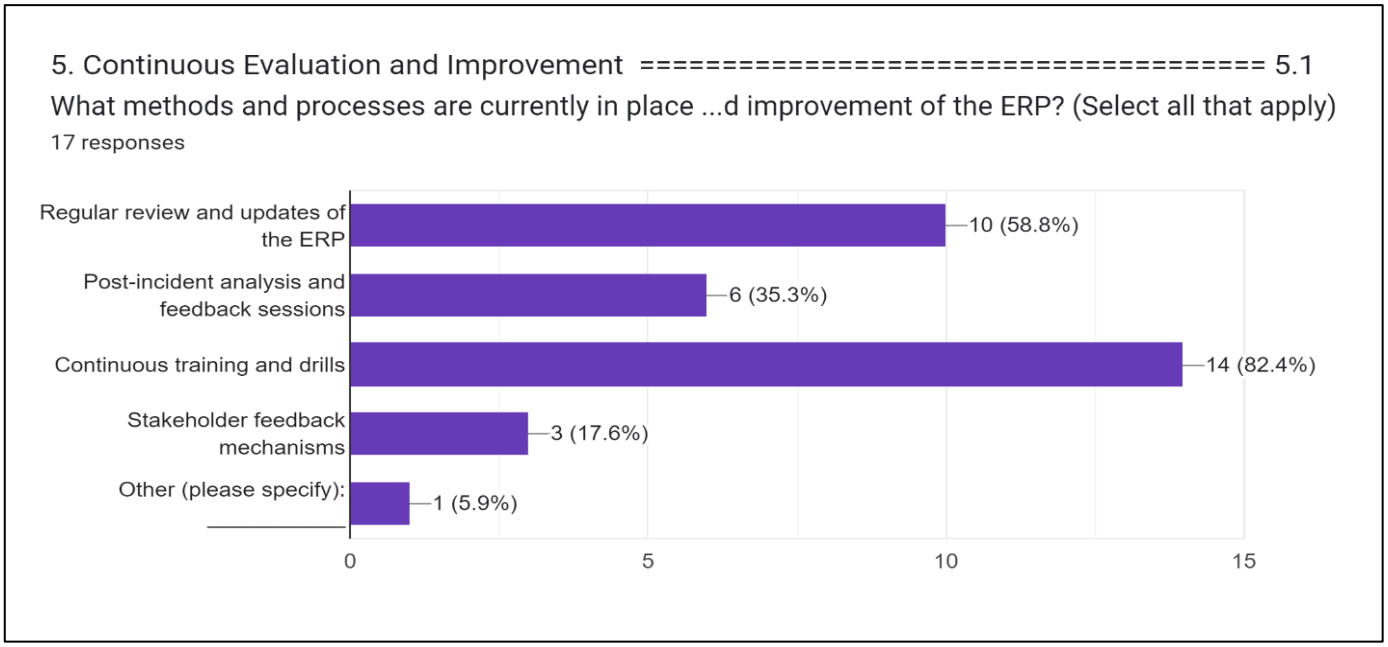

Fig 10: Improvement

The figure shows a horizontal bar chart titled "5.1 What methods and processes are currently in place...d improvement of the ERP? (Select all that apply)".

➢ *The Chart Shows the Number of Respondents who Selected Each of the Following Improvement Options:*

- Regular review and updates of the ERP: 10 (58.8%)
- Post-incident analysis and feedback sessions: 6 (35.3%)
- Continuous training and drills: 14 (82.4%)
- Stakeholder feedback mechanisms: 3 (17.6%)
- Other (please specify): 1 (5.9%)

The horizontal bars represent the number of respondents who selected each option, and the percentages indicate the proportion of respondents who selected each option.

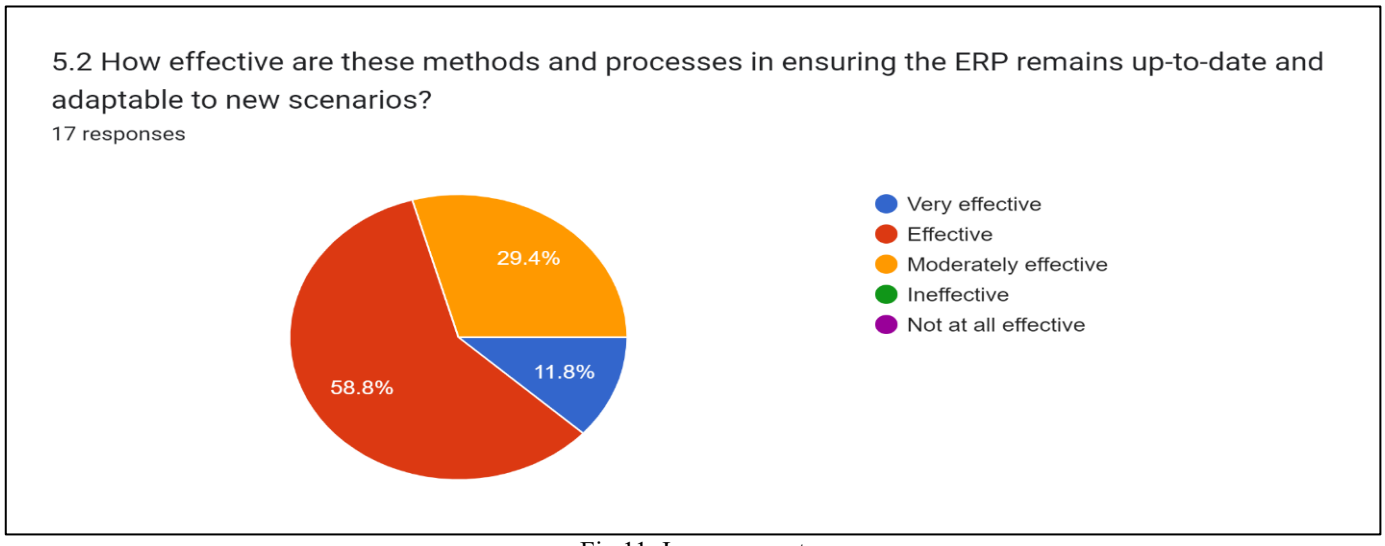

Fig 11: Improvement

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

The figure shows a pie chart summarizing the responses to the question "How effective are these methods and processes in ensuring the ERP remains up-to-date and adaptable to new scenarios?" with 17 responses.

The pie chart is divided into 3 sections, representing the following response options and their corresponding percentages:

- *Very Effective: 11.8%*

- Effective: 58.8%
- Moderately effective: 29.4%
- Ineffective: 0%
- Not at all effective: 0%

IV. DISCUSSION

In the distribution of assigned departments among the respondents, operations and maintenance and admin each represent the largest share of 26.3%. This suggests that these areas seem to stand out among the respondents. In contrast, the office of the general manager had the lowest representation at 10.5%, indicating a smaller role or relevance to fewer respondents compared to other departments.

- Conclusion: Operations & Maintenance and Admin are also represented among the respondents, indicating that these areas are important to the respondents. In contrast, the general manager's office is underrepresented, perhaps indicating a smaller role or fewer respondents in this department.

Regarding the effectiveness of the ERP system in addressing the challenges posed by Hurricane Odette, the majority of respondents rated it as "effective", with 47.4% selecting this option This demonstrated a strong understanding of ERP system operations. However, a smaller proportion, 31.6%, considered it to be "effective", indicating a level of satisfaction that, although positive, was not universally high. These differences indicate that although the ERP system is generally considered effective, there is still room for improvement to improve efficiency.

- Conclusion: Most of the respondents feel that ERP is effective in solving challenges, but there is a notable segment that believes it is only marginally effective, indicating room for improvement

The most important factor respondents identified when considering improvements needed for ERP performance was "enhanced training and evaluation", with 68.4% choosing this option This indicates a greater emphasis on providing training options ERP performance has improved. In contrast, there were no responses in the "other" category, indicating that respondents never identified additional areas beyond those listed, or thought that further improvements were needed This focus on training there has been a clear consensus on the need for more complex aspects of educational practice in the ERP system.

- Conclusion: Enhanced training and simulation is the most emphasized area for improvement, clearly indicating the need for better training methods. The lack of answers for "other" indicates that respondents do not see other areas beyond the options provided.

In terms of identifying gaps or weaknesses in ERP feedback mechanisms, both "inadequate resources or equipment" and "inadequate training or practice" emerged, each cited by 58.8% of respondents indicating that these areas are major concerns affecting ERP efforts. On the other hand, there were no responses in the "other" category, indicating that respondents did not consider or consider additional information beyond what was identified. This reflects a strong consensus on the need for improved resource management and training to improve ERP feedback strategies

- Conclusion: Inadequate resources and inadequate training are major concerns, emphasizing the importance of resource management and training improvements.

When analyzing gaps in ERP communication systems, "insufficient information distribution" is identified as the most important issue, with 52.9% of respondents highlighting it as a major concern This means improving how information is shared in a crisis is critical to increase efficiency ERP systems. In contrast, the "other" category, which received only 5.9% of responses, indicates that communication updates were either less accepted or mostly considered important This highlights the critical importance of strengthening communication systems and highlight deficiencies in information classification.

- Conclusion: Misclassification of information is a significant issue, suggesting that improving the classification of information in a problem can improve the effectiveness of the ERP.

The most valuable aspect of how well the ERP fits into CWD's strategic business plan is its ability to "ensure the continuity of critical tasks", with 58.8% of respondents confirming this emphasize as a major benefit. In contrast, there were no responses in the "other" category, indicating that no other aspects beyond those listed are considered relevant or important by respondents This attention to continuation this emphasizes the importance of appropriately integrating ERP systems.

- Conclusion: Ensuring continuity of critical tasks is highly valued, indicating that this aspect is critical for business transformation.

In analyzing the integration of ERP into a business process management strategy, the majority of the respondents, 47.1%, believed that ERP is "well integrated" This indicates a positive evaluation in terms of ERP compatibility with strategic planning. However, only 11.8% perceive ERP as "well integrated", which means that although integration is generally perceived as effective, there is a notable gap between adequate and optimal integration This

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

gap indicates opportunities a it will improve how ERP is more compatible with a well-designed business process.

- Conclusion: While most respondents feel that ERP and business process optimization are well integrated, few believe that they are very well integrated, meaning there is room they can be matched more closely.

Among the ways to improve an ERP system, "training and continuous practice" is the most highlighted approach, with 82.4% of respondents thinking that this is a key area to they improve This high percentage indicates strong agreement on the need to continue actively improving ERP. In contrast, "participatory strategies" received the lowest level of support at 17.6%, indicating that respondents perceived these strategies as less important or effective compared to other improvement strategies This emphasizes the preference for training and ongoing practice over feedback mechanisms in an attempt to improve ERP performance.

In assessing the effectiveness of the methods used to ensure ERP compatibility, 58.8% of respondents found these methods to be "effective". This indicated that they had a strong understanding of the benefits of maintaining ERP change. However, only 11.8% of these strategies are considered "effective", meaning that although the strategies are generally perceived as useful, they fail to deliver positive outcomes for all users This distinction occurs if necessary improvements are needed to enable the ERP system to increase flexibility and achieve high quality emphasis effectively.

- Conclusions: While the majority of respondents perceive ERP change retention strategies as effective, few perceive them as highly effective, suggesting that there may be limits to how the effective use of these methods

V. SUMMARY

- High Value: The data highlights the need for improved training and evaluation, better resource utilization, and ensuring continuous infrastructure in critical areas to improve ERP performance is constantly emphasized. These features are generally identified as key to increasing the overall efficiency and functionality of an ERP system.
- Lowest Value: In contrast, more emphasis is placed on strategies for stakeholder feedback, feedback to "others", and ERP integration and achieving the highest level of benefit This indicates that these areas receive little attention or are not seen as having a significant impact compared to the identified priorities.
- General conclusions: Respondents generally find the ERP system effective. However, there is significant progress, particularly in the areas of training, resource allocation and networking. Addressing these issues should improve the effectiveness and flexibility of the overall system, leading to efficiency and flexibility.

REFERENCES

[1]. Garcia, L., & Santos, M. (2021). Emergency Preparedness and Response: Best Practices in Water Utilities. Journal of Disaster Management, 15(3), 45-67.
[2]. Jones, A., & Brown, T. (2022). Lessons Learned from Typhoon Odette: Enhancing Resilience in Water Infrastructure. Water Management Review, 22(1), 34-49.
[3]. Lopez, P., & Hernandez, R. (2018). Integrating Emergency Response Plans with Business Continuity Planning. Crisis Management Journal, 10(2), 78-89.
[4]. Martin, J. (2017). Emergency Management and Organizational Resilience. Global Journal of Safety and Security, 5(4), 101-113.
[5]. Mendoza, E. (2018). Continuity Planning in the Face of Climate Change. Environmental Policy Journal, 12(2), 59-75.
[6]. Republic Act 9729. (2009). Climate Change Act of 2009.
[7]. Philippine Disaster Risk Reduction and Management Act. (2010). Republic Act 10121.
[8]. Rivera, D. (2020). Aligning Emergency Response Plans with Regulatory Frameworks. Policy and Practice Journal, 14(1), 22-36.
[9]. Sanchez, K., Lopez, H., & Cruz, J. (2021). Developing Adaptive Strategies for Emergency Management. Journal of Urban Planning and Development, 20(3), 88-102.
[10]. Smith, R. (2020). The Importance of Emergency Planning in Modern Society. Journal of Emergency Management, 19(2), 150-162.
[11]. Torres, A., & Cruz, M. (2019). Building Resilience through Effective Emergency Response Planning. International Journal of Disaster Risk Reduction, 24, 72-84.
[12]. White, J., Thompson, B., & Green, S. (2019). Understanding the Challenges of Emergency Response in Water Utilities. Water Resources Management, 18(4), 231-248.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

SURVEY QUESTIONNAIRE

Name: _____

A. Addressing Challenges and Lessons Learned

➢ *How Well do you Think the Current ERP Addresses the Challenges Faced during Typhoon Odette?*

- Very effective
- Effective
- Moderately effective
- Poor
- Not at all

➢ *What Specific Improvements do you Believe are Needed in the ERP to Enhance its Effectiveness based on the Lessons Learned from Typhoon Odette? (Select all that Apply)*

- Improved response strategies
- Better resource allocation
- Enhanced training and simulations
- More effective communication protocols
- Other (please specify): _____

B. Integration with Regulatory Frameworks

➢ *In What Ways has the Integration of the CWD National Performance Continuity Plan with Regulatory Frameworks like Republic Act 9729 (Climate Change Act) and Republic Act 10121 (Disaster Risk Reduction and Management Act) Improved the ERP? (Select all that Apply)*

- Increased compliance with regulations
- Improved robustness and reliability of the ERP
- Enhanced ability to manage climate-related challenges
- Better alignment with national disaster risk management standards
- Other (please specify): _____

➢ *How Effectively does the ERP Align with these Regulatory Frameworks in Practice?*

- Very effective
- Effective
- Moderately effective
- Poor
- Not at all

C. Gaps and Weaknesses

➢ *What Specific Gaps or Weaknesses have you Observed in the ERP's Response Strategies? (Select all that Apply)*

- Delays in response time
- Insufficient resources or equipment
- Lack of clarity in roles and responsibilities
- Inadequate training or drills
- Other (please specify): _____

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24AUG1255

➢ *What Gaps or Weaknesses have you Observed in the ERP's Communication Protocols? (Select all that Apply)*

- Ineffective communication channels
- Lack of timely updates to stakeholders
- Poor coordination between teams
- Inadequate information dissemination
- Other (please specify): _____

D. Alignment with Strategic Business Plan

➢ *How does the Alignment of the ERP with the CWD Strategic Business Plan Contribute to Managing Emergencies and Ensuring Operational Continuity? (Select all that Apply)*

- Facilitates seamless integration of emergency plans with business operations
- Ensures continuity of essential services
- Enhances overall organizational resilience
- Provides clear objectives and strategies for crisis management
- Other (please specify): _____

➢ *How well is the ERP Integrated with the Strategic Business Plan?*

- Very well integrated
- Well integrated
- Moderately integrated
- Poorly integrated
- Not integrated

E. Continuous Evaluation and Improvement

➢ *What Methods and Processes are Currently in Place for the Continuous Evaluation and Improvement of the ERP? (Select all that Apply)*

- Regular review and updates of the ERP
- Post-incident analysis and feedback sessions
- Continuous training and drills
- Stakeholder feedback mechanisms
- Other (please specify): _____

➢ *How Effective are these Methods and Processes in Ensuring the ERP Remains up-to-Date and Adaptable to New Scenarios?*

- Very effective
- Effective
- Moderately effective
- Ineffective
- Not at all effective